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IS 4044 (1993): Textiles - Gents' Slipover, Knitted [TXD
10: Hosiery]



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वस्त्रादि — पुरुषों के लिए बुने हुए (निटेड)
स्लिपओवर — विशिष्ट

(पहला पुनरीक्षण)

Indian Standard

TEXTILES — GENTS' SLIPOVER, KNITTED —
SPECIFICATION

(*First Revision*)

UDC 687.119 : 687.31/36

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Hosiery Sectional Committee had been approved by the Textile Division Council.

The standard was first published in 1967. This revision has been made based on the present manufacturing practices and the various types of machine knitting process adopted. In this revision, the classification has been made for various types of slippers with wool and its blends, to suit the needs of customers. The performance requirements of slipper has been specified as per the needs. Also, physical requirements of slipper has been specified so as to permit different constructions, based on the type of yarns used and texture.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

TEXTILES — GENTS' SLIPOVER, KNITTED — SPECIFICATION

(*First Revision*)

1 SCOPE

1.1 This standard prescribes the constructional particulars and other requirements of gents' knitted slipover manufactured by machine knitting, using hosiery yarn, which are bleached, dyed or in mixture shades.

1.2 This standard does not prescribe the subjective characteristics like design, colour combination, type of finish, general appearance and feel of slipover.

2 REFERENCES

The Indian Standards given in Annex A are necessary adjuncts to this standard.

3 TERMINOLOGY

For the purpose of this standard, the definition given in IS 3596 : 1967 shall apply.

NOTE — Glossary of Textile Terms (SP 45 : 1988) covers definitions of terms for all types of textile materials.

4 MANUFACTURE

4.1 Class of Slipover

The slipover shall be of any one of the three classes, depending upon the quality of the fibrous material used in its yarn (out of which the slipover is manufactured). The following are the classes of slipover:

- i) Woollen slipover
- ii) Acrylic slipover
- iii) Blended slipover

4.1.1 The woollen slipover shall be further designated in three categories as indicated below, depending upon the quality grades of virgin wool tops (*see* Note 2 under **4.2.1**) out of which these are manufactured:

- a) Superfine — Above 70s
- b) Fine — Above 60s and up to 70s
- c) Medium — Above 56s and up to 60s

4.1.2 The acrylic slipover shall be manufactured from 100 percent acrylic yarn spun from acrylic tops on worsted system. The acrylic tops shall not contain acrylic fibres obtained from waste or re-manufactured acrylic material.

4.1.3 The blended slipover shall be manufactured from yarn spun from the blends of wool with

acrylic fibres and/or polyester fibres (or) viscose rayon and/or polyamide (nylon) fibres as given in **4.2.1**.

4.2 Yarn

The hosiery yarn used for knitting the slipover and its components like welt (or tape) and border shall be evenly spun from quality fibre tops in soft twist and shall possess good covering properties, spun on the worsted system. (*see also* **4.3.1** and **4.3.2**).

4.2.1 The hosiery spun yarn shall be 100 percent virgin wool (*see* Note 2), or 100 percent acrylic fibres, or blends of wool with acrylic fibres and/or polyester fibres (or) viscose rayon and polyamide (nylon) fibres (*see also* IS 7026 : 1973 and IS 7747 : 1975). In the blends, the virgin wool content shall not be less than 70 percent and that of viscose rayon, wherever viscose rayon is used, shall not be more than 15 percent. The blend proportions shall be such that it shall not exceed more than three fibre components (*see* Notes).

NOTES

1 Additionally, animal hair fibres 100 percent or along with virgin wool blends as per **4.2.1** may also be used if agreed to between the buyer and the seller. Their presence present in the yarn may be identified as per the method given in IS 667 : 1981 (to be read along with supplement).

2 For information, identification of virgin wool may be made by microscopic examination of the scales on the wool fibre which are comparatively less damaged as compared with shoddy wool or waste, etc. Also, it may be noted that the hairiness, and thereby pilling, in the fabrics are more pronounced when other wools are used.

4.3 Fabric

The fabric used in the manufacture of slipover shall be evenly knitted by machine knitting. The hosiery yarn used and the fabric shall be bleached or dyed to the required shade or knitted with yarn of mixture shades as agreed to between the buyer and the seller.

4.3.1 Moth Proofing

The yarn or fabric used in the manufacture of slipover and their components before seaming may be treated with suitable moth proofing agents, if agreed to between the buyer and the seller.

4.3.2 Shrink-Proof

The tops of yarn or fabrics used in the manufacture of slipover may also be treated with a

suitable shrink-resistance process, if agreed to between the buyer and the seller.

4.4 Seams and Stitches

All joining shall be stitched with three-thread overlock stitches or by linking or by covering stitches (see also IS 10789 : 1983 and IS 11161 : 1985).

4.4.1 It is recommended that for all stitches, one strand of sewing thread conforming to any one of the appropriate varieties specified in IS 1720 : 1978 or IS 9543 : 1980 or sewing threads better in quality, shall be used in the needle and two strands of sewing threads as above of the same type as used for knitting the slipover, shall be used in the loopers.

4.4.2 In case of single colour slipover all threads used for stitching shall be of the same colour as that of the body of the slipover; and in case of multicolour slipover they shall be of the major or ground colour.

4.4.3 The number of stitches shall not be less than 4 per cm.

4.5 Slipover

The shape of the slipover shall be as shown in Fig. 1. The wales shall preferably run along the length of slipover.

4.5.1 If agreed to between the buyer and the seller, the slipover shall be attached with welt at the neck by stitching or linking. The slipover may

also be manufactured with welt attached at armholes and border.

4.5.2 The slipover shall be of V-neck, round neck or high neck (see Fig. 1, 1A and 1B), as agreed to between the buyer and the seller.

4.5.3 Welt (or Tape)

As agreed to between the buyer and the seller, the welt meant for stitching or linking at the neck shall be rib knitted such as 1×1 , 2×2 , etc, or trimmed out of the fabric as used for fabricating the slipover.

4.5.3.1 The width of the welt in case of slipover having V-neck and round neck shall be at least 20 mm and in case of slipover having high neck it shall be as agreed to between the buyer and the seller (see also 4.5.6).

4.5.3.2 The welt at the neck shall be securely stitched or linked to the slipover. The seams shall appear on the inside of the slipover.

4.5.4 Border

The border at the bottom of slipover and at the armholes may preferably be knitted along with the slipover or at armholes in 1×1 rib or 2×2 rib knitted fabric, so as to have more elasticity than the body of knitted slipover and sleeves. If the border is knitted separately it may be stitched or linked in such a way that the seams appear at the inside of the slipover. The projecting ends of the seams, if any, may be flattened by over seaming or seam covering stitches.

4.5.4.1 High neck portion

In case of high neck slipover, it may preferably be knitted in 1×1 or 2×2 rib knit along with the body of the slipover. If the high neck portion is knitted separately, it may be knitted with more elasticity and may be stitched or linked in such a way that the seams may be flattened by seam-covering over-covering or flat-lock seam stitches. The height of the high neck slipover shall be at least 40 mm or as agreed to between the buyer and the seller.

4.5.5 Reinforcements

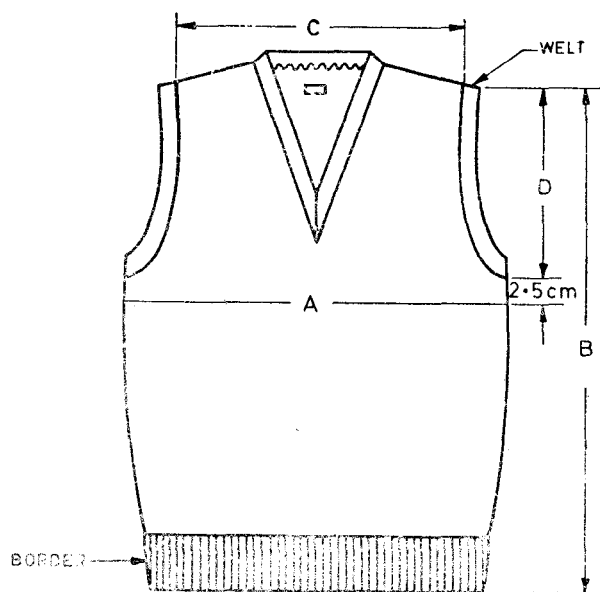
The seam joining the body and the border, at the armhole or at the shoulder and other places shall be reinforced suitably at the inside, preferably by seam covering.

4.5.5.1 The 'round' or 'tubular' edges of the rib welts intended for reinforcement shall be formed by knitting three or four courses.

4.5.6 All stitches shall be of even tension throughout with all the loose ends securely fastened. Stitching shall not give way when the slipover is stretched to one and a half times.

4.5.7 Freedom from Defects

The slipover shall be free from grease, soap, filling or any other extraneous material. It shall



1A Round Neck

1B High Neck

Fig. 1 Typical V-Neck Slipover

be reasonably free from manufacturing and tailoring defects such as large mends, ladders, dropped stitches, improper reinforcement, missed stitches. It shall be also free from stains, chemical damages and dyeing defects like uneven dyeing, streakiness, etc. The fabric used shall not be over-boarded.

5 REQUIREMENTS

5.1 The dimensions of the slipover shall conform to the requirements specified in Table 1 when read with Fig. 1.

Table 1 Dimensions of Slipover
(Clause 5.1, and Fig. 1)

(All dimensions in centimetres)				
Size	Width Across Chest	Length of Slipover	Width Across Shoulder	Width of Opening at Armhole
	(A)	(B)	(C)	(D)
(1)	(2)	(3)	(4)	(5)
75	38.5	53.5	28.0	19.0
80	41.0	58.5	30.0	20.0
85	43.5	61.5	32.0	21.0
90	46.0	63.5	34.0	23.0
95	48.5	66.5	36.0	24.0
100	51.0	69.5	38.0	25.0
105	54.5	77.5	40.0	26.0
110	57.0	77.5	42.0	26.0
Tolerance	± 1.5	— 2.0	± 1.5	± 2

Methods of Test *see* B-1

NOTE — The dimensions at C and D may be varied subject to agreement between the buyer and the seller, subjected to the tolerances specified on the agreed values. However, the dimensions so agreed shall not be less than those specified above.

5.1.1 The other dimensions of the slipover as indicated in Fig. 1 shall be as agreed to between the buyer and the seller. The minimum mass of slipovers for each size may be as agreed to between the buyer and the seller.

NOTE — The size of the slipover is denoted by a number which is the approximate value of the chest girth in centimetres.

Example:

An 80 size slipover represents a slipover with a chest girth of approximately 80 cm at A (*see* Fig. .).

5.2 The slipover shall conform to the requirements as specified in Table 2.

6 MARKING

6.1 A cloth label of suitable size shall be securely attached to each slipover on the inside of the neck portion (back-side) on which shall be indicated the following:

- Size;
- Class of slipover (*see* 4.1);
- Designation of woollen slipover (*see* 4.1.1);
- Fibre/blend composition (*see* 4.1.1, 4.1.2 and 4.1.3);
- Any other information required by the buyer; and
- Care labelling (*see* IS 4418 : 1967).

6.1.1 Slipover may also be marked with the Standard Mark.

Table 2 Requirements of Slipover
(Clause 5.2)

Sl No.	Characteristics	Requirements	Method of Test
1.	Construction :		B-2
	a) Walse per 5 cm } b) Courses per 5 cm }	Declared or as agreed Tolerance ±2	
2.	Dimensional change (due to relaxation) percent, <i>Max</i>	5.0	IS 1313 : 1984
3.	Scouring loss, percent, <i>Max</i>	5.0	B-3
4.	Alkali solubility, percent, <i>Max</i> (not applicable for 100 percent acrylic)		IS 3429 : 1966
	a) Bleached	25.0	
	b) Dyed/mixed shade	200	
5.	pH value of aqueous extract:		IS 1390 : 1983 (Cold Method)
	a) All wool		
	i) Bleached and stoved shades	4.0 to 7.5	
	ii) Other shades	6.0 to 7.5	
	b) Acrylic or blended	5.0 to 7.5	
6.	Minimum colour fastness ratings:		
	a) Light	4	IS 686 : 1985 or IS 2454 : 1985 IS 679 : 1979
	b) Washing : Test 1 (Hand wash)		
	i) Change in colour	3	
	ii) Staining of adjacent fabric	3	
	c) Rubbing (Dry and wet)	3	IS 766 : 1988
	d) Dry-cleaning	4	IS 4802 : 1988
7.	Blend composition, percent	As agreed Tolerance ±2	IS 11195 : 1985

7 PACKING

7.1 The slipovers shall be packed properly (see IS 3353 : 1966 or IS 2518 : 1964).

8 SEALED SAMPLE

If, in order to illustrate or specify the design, colour combination, type of finish, general appearance, feel, etc, of the slipover, a sample has been agreed upon and sealed, the supply shall be in conformity with the sample in such respects.

8.1 The custody of the sealed sample shall be a matter of prior agreement between the buyer and the seller.

8.2 The quality characteristics namely number of wales and courses per 5 cm and the mass of ten slipovers in kg, shall be in conformity with the sealed sample subjected to the tolerances as specified at Sl No. 1 of Table 2 and ± 2.5 per cent on mass respectively.

9 SAMPLING

9.1 Lot

In any consignment, all the slipovers of the same size, and manufactured from the same quality of yarn shall constitute a lot.

9.1.1 Conformity of the lot to the requirements of this specification shall be determined on the basis of tests conducted on the samples selected from the lot.

9.2 Unless otherwise agreed upon between the buyer and the seller, a certain number of slipovers depending upon the lot shall be selected at random from the lot to constitute the gross sample, the number of such slipovers shall be in accordance with col 2 of Table 3.

Table 3 Sample Size and Criteria for Conformity

(Clauses 9.2, 9.3, 9.4 and 9.5)

No. of Slipovers	Sample Size		Sub-Sample Size
	No. of Slipovers to be Selected	Permissible No. of Non-conforming Slipovers	No. of Slipovers to be Selected
(1)	(2)	(3)	(4)
Up to 50	10	0	3
51 „ 100	20	1	3
101 „ 200	30	2	3
201 „ 300	40	3	3
301 „ 500	50	3	4
501 „ 800	70	4	4
801 „ 1 300	110	6	5
1 301 „ 3 200	150	8	7
3 201 and above	220	11	7

9.3 For the purpose of examining the requirements in respect of (i) general requirements, (ii) the number of wales and courses per 5 cm, and (iii) dimensions of slipovers and such other requirements as might have been specified through sealed sample (8.1 and 8.2), the slipovers drawn in accordance with col 2 of Table 3 shall constitute the gross sample.

9.3.1 For the determination of weight, a group of 10 slipovers in the gross sample shall constitute a test specimen and for the purpose of remaining requirements enumerated in 9.3, each slipover in the gross sample shall constitute a test specimen.

9.4 For determining (a) dimensional change, (b) pH value, (c) scouring loss, (d) colour fastness, (e) alkali solubility, and (f) blend composition, the reduced sample drawn in accordance with col 4 of Table 3, obtained by selecting slipovers at random from those in the gross sample shall constitute the test sample.

9.5 Criteria for Conformity

A lot shall be considered as conforming to this standard if:

- in respect of (i) general requirements, (ii) the number of wales and courses per 5 cm, (iii) dimensions of slipovers and such other requirements as might have been specified through sealed sample (8.1 and 8.2), the number of slipovers failing to satisfy any one of these requirements does not exceed the applicable number specified in col 3 of Table 3.
- from the observed values of dimensional change, scouring loss, the average X and the range R are calculated and the value of the expression $X + 0.5 R$ is found to be less than or equal to the specified value.
- from the observed pH values, the average X and the range R are calculated, and the values of the expressions $X - 0.5$ and $X + 0.5 R$ lie within the specified values.

NOTES:

1 The average X is obtained by dividing the sum of all the observed values by the number of samples tested.

2 The range R is the difference between the maximum and the minimum of the observed values.

- None of the test specimens tested for colour fastness and blend composition fails to satisfy the requirements.

ANNEX A (Clause 2)

LIST OF REFERRED INDIAN STANDARDS

<i>IS No.</i>	<i>Title</i>	<i>IS No.</i>	<i>Title</i>
667 : 1981	Methods for identification of textile fibres (<i>first revision</i>)	3353 : 1967	Code for inland packing of wool hosiery yarn and goods
686 : 1985	Methods for determination of colour fastness of textile materials to day light (<i>first revision</i>)	3429 : 1966	Method of determination of solubility of wool in alkali
687 : 1979	Method for determination of colour fastness of textile materials to organic solvents	3596 : 1967	Glossary of terms relating to hosiery
766 : 1956	Method for determination of colour fastness of textile materials to rubbing	4418 : 1967	Guide for care labelling of textiles for laundry and dry-cleaning
1313 : 1984	Method for determination of dimensional changes on washing of knitted goods containing wool (<i>first revision</i>)	4802 : 1968	Method for determination of colour fastness of textile materials to dry-cleaning
1390 : 1983	Methods for determination of pH value of aqueous extract of textile materials (<i>first revision</i>)	7026 : 1973	Hosiery yarn, worsted
1720 : 1978	Cotton sewing threads (<i>second revision</i>)	7747 : 1975	Hand-knitting wool yarn, worsted
2454 : 1985	Method for determination of colour fastness of textile materials to artificial light (xenon lamp) (<i>first revision</i>)	9543 : 1980	Spun polyester sewing threads
2518 : 1964	Code for worthy packaging of wool hosiery yarn and goods	10789 : 1983	Classification and terminology of stitch
		11161 : 1985	Textile — Seam types — Classification and terminology (ISO 4916 : 1982)
		11195 : 1985	Blend compositions of textiles
		SP 45 : 1988	Handbook on glossary of textile terms

ANNEX B (Tables 1 and 2)

B-1 METHOD FOR MEASURING DIMENSIONS

B-1.1 Procedure

Take a slipover constituting the test specimens. Lay it flat on a horizontal surface. Remove all creases and wrinkles without distorting the specimen. Measure correct to the nearest 5 mm, the dimensions given in Table 1.

B-1.2 Take the slipover to be in conformity with the requirements of Table 1 in respect of dimensions if none of the values as observed in **B-1.1** varies from the specified value by more

than the specified tolerance.

B-1.3 Repeat the procedure with the remaining slipovers in the test specimens.

B-2 WALES AND COURSES

B-2.1 Procedure

Take a slipover constituting the test specimens. Lay it flat on a horizontal surface. Remove all creases and wrinkles without distorting it. On one side of the test specimen, count with the help of a pick glass or magnifying glass, the number of wales per 5 cm and courses per 5 cm of the fabric.

B-2.2 Take the slipover conforming to the requirements of Table 2 in respect of wales and courses, if the values for the number of wales per 5 cm and the courses per 5 cm as determined in B-2.1 do not vary from the specified value by more than the specified tolerances.

B-2.3 Repeat the procedure with the remaining slipovers in the test specimens.

B-3 METHOD FOR DETERMINING SCOURING LOSS

B-3.1 Test Specimen

Take about 10 g of yarn from each sample. This shall constitute a test specimen.

B-3.2 Procedure

Dry the test specimen to constant mass in the drying oven at $105 \pm 3^\circ\text{C}$ temperature and determine its mass accurately.

NOTE — Constant mass shall be deemed to have been reached if the difference between the two

successive weighings at an interval of 20 minutes is less than 0.05 percent.

B-3.3 Extract the specimen with a mixture of benzene and methyl alcohol in the proportion of 3 : 2 in a Soxhlet apparatus for 4 hours at the rate of 5 extractions per hour, taking care to place the specimen in a thimble and covering it with cotton wool previously extracted with petroleum hydrocarbon solvent (petroleum ether). Remove the specimen from the extract. Dry the residue to a constant mass (see Note under B-3.2 at $105 \pm 3^\circ\text{C}$ and determine the mass accurately.

B-3.4 Calculation

Calculate the scouring loss by the following formula:

$$\text{Scouring loss, percent} = \frac{a}{b} \times 100$$

where

a = mass of the dry residue (see B-4.1), and

b = mass of the test specimen (see B-3.1).

Standard Mark

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BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002

Telephones : 331 01 31, 331 13 75

Telegrams : Manaksanstha
(Common to all Offices)

Regional Offices:

Telephone

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg
NEW DELHI 110002

{ 331 01 31
331 13 75

Eastern : 1/14 C. I. T. Scheme VII M, V. I. P. Road, Maniktola
CALCUTTA 700054

{ 37 84 99, 37 85 61
37 86 26, 37 86 62

Northern : SCO 445-446, Sector 35-C, CHANDIGARH 160036

{ 53 38 43, 53 16 40
53 23 84

Southern : C. I. T. Campus, IV Cross Road, MADRAS 600113

{ 235 02 16, 235 04 42
235 15 19, 235 23 15

Western : Manakalaya, E9 MIDC, Marol, Andheri (East)
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